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## As Fishes Migrate, Their Food Might Not Follow

Ocean species seeking cooler waters to survive may have to adapt to their new environments by changing their diets

By Mark Fischetti | Tuesday, September 25, 2012

Monterey, Calif.—As Earth's atmosphere heats up due to global warming, the world's oceans will warm, too. All kinds of creatures, from the smallest plankton to the largest fishes, will be forced to adjust. Some of them may be able to adapt by altering their body chemistries, but the most likely response—for those that are free to travel (unlike oysters, say)—is simply to move.

Indeed, certain species of fish are migrating away from mid-latitude oceans toward cooler waters such as the Arctic Ocean, according to recent studies. Scientists are finding that, in general, larger ocean organisms such as fishes have less tolerance for temperature change than the microorganisms they consume, such as phytoplankton. So it is possible that as fishes migrate, their preferred food sources may not. To survive, the migrants may have to change their diet once they reach their new neighborhoods. Some of the most recent findings are being released for the first time at a symposium here this week called The Ocean in a High-CO<sub>2</sub> World.

Of course, the fishes that already live in colder oceans may not appreciate the arrival of newcomers that could compete for their food. Yet the native species have their own challenges. Research is showing that fishes native to colder waters are even less tolerant of temperature changes than those in warmer waters, according to Hans-Otto Pörtner at the Alfred Wegener Institute for Polar and Marine Research in Germany. "The temperature range that fish are comfortable in decreases as latitude rises," he says. Over time, then, the mix of species could change. In cold northern waters, for example, sardine populations are dropping but anchovy populations are rising.

Other factors come into play: Increasing carbon dioxide emissions worldwide are making all oceans more acidic, forcing species to use more energy to adapt, leaving them with less energy to reproduce and grow. Oxygen levels in certain ocean regions are dropping, adding a third stressor to acidification and temperature rise. Scientists are beginning to unravel how these multiple stressors are affecting species across large spans of ocean, but much more data and analysis is needed. In the meantime, increasing numbers of species may be on the move. What they will eat once they reach their destinations, and which ocean inhabitants they may have to compete with, remains to be seen.



Blue tang  
Image: NOAA

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